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## VIA ELECTRONIC MAIL AND FEDERAL EXPRESS

January 22, 2015

Jennifer L. LaPoma Remedial Project Manager Western New York Remediation Section U.S. Environmental Protection Agency 290 Broadway, 20<sup>th</sup> Floor New York, NY 10007

Re: Supplemental Information in Response to Technical Questions from December 16, 2014 Meeting New Cassel/Hicksville Groundwater Contamination Superfund Site, Nassau County, New York

Dear Ms. LaPoma:

On behalf of our client, Vishay GSI, Inc. (VGSI), WSP USA, Corp. (WSP) is submitting this letter in response to technical questions raised during a meeting held on December 16, 2014, related to the New Cassel/HicksvilleGroundwaterContaminationSuperfundSite. I attended this meeting as a technical consultant for VGSI. Also in attendance at the meeting were legal counsel for VGSI and legal and technical representatives for the United States Environmental Protection Agency (EPA), GTE Operations Support, Inc. (GTEOSI), and the United States Army Corps of Engineers (USACE).

During the meeting, groundwater quality data collected by WSP and the USACE were discussed, which support WSP's conclusion that the limits of volatile organic compounds (VOCs) attributable to the former GIC site do not intrude into or overlap with the boundaries of OU1. This letter presents and elaborates on the specific data reviewed during the meeting. A figure is enclosed (Figure 1) that shows the locations of the New Cassel Industrial Area (NCIA), OU1, the former GIC Site, the former Sylvania site, and the groundwater profile and monitoring well locations referenced below. Table 1 includes a summary of the groundwater quality data discussed below.

## 1,2-DCB as a Chemical Tracer for VOCs Attributable to the Former GIC Site

A series of groundwater profiles and monitoring wells were installed during the RI conducted under the oversight of the New York State Department of Environmental Conservation (NYSDEC) to delineate and monitor the area of groundwater containing VOCs attributable to the former GIC site. The most recent RI report, the *Interim Phase VI Remedial Investigation Report and Supplemental Work Plan,* was prepared by WSP and submitted to the NYSDEC on May 21, 2010. The Phase VI RI included the results of groundwater sampling from monitoring wells and Waterloo profiles, and the output of a computer-based groundwater flow and contaminant transport model developed by JGE Environmental (JGE Model) with support from WSP.

Tetrachloroethene (PCE), trichloroethene (TCE), and their degradation compounds are ubiquitous in groundwater in Nassau County. Because of the multitude of overlapping, known and potential sources of PCE and TCE, JGE and WSP utilized 1,2-dichlorobenzene (1,2-DCB) as a chemical tracer in the modeling; an assumption that has been accepted by the NYSDEC. 1,2-DCB was released in a mixture



with the other VOCs of concern at the former GIC site, with concentrations of 1,2-DCB much higher in source material, approximately two to four times the concentrations of TCE and PCE, respectively. At the time the Phase VI RI was prepared, it was believed that the use of 1,2-DCB was not documented at other specific facilities near the former GIC site.

Subsequent to WSP's submission of the Phase VI RI, further file review revealed that 1,2-DCB was in fact detected in a number of samples collected in 1988 from a series of storm water drywells and septic disposal systems located on the Utility Manufacturing property at 700-712 Main Street within the New Cassel Industrial Area (NCIA) Eastern Plume. Among these results, 1,2-DCB was detected in cesspool sludge (up to 240,000  $\mu$ g/kg), drywell liquids (up to 50  $\mu$ g/l) and sediment (up to 7,900  $\mu$ g/kg), leaching pool liquid (up to 420  $\mu$ g/l) and sediment (up to 130,000  $\mu$ g/kg), and septic tank sediment (up to 51,000  $\mu$ g/kg). 1,2-DCB was also detected in soil samples (up to 23  $\mu$ g/kg) collected near the septic disposal system. In light of this information, 1,2-DCB at significantly high enough concentrations remains a good, though imperfect, chemical tracer for VOCs attributable to the former GIC site. Detections of 1,2-DCB near and downgradient of these sources on or adjacent to the Utility Manufacturing property are not attributable to the former GIC site.

WSP's Phase VI RI presented the observed limits of 1,2-DCB in groundwater in all spatial directions, based on actual groundwater sampling results. These limits of 1,2-DCB did not overlap any portion of OU1. The JGE Model was calibrated to these observed limits of 1,2-DCB, and the modeled extents of 1,2-DCB were also presented to the NYSDEC in the Phase VI RI. The modeled limits matched fairly well with the observed limits, except in an area along the southwest edge, where the JGE Model projected 1,2 DCB at a location in which no 1,2 DCB had been observed. Because there was no actual field data to support the modeled extent, the area was identified in the Phase VI RI report as an, "area of uncertainty to be verified or disproved with additional sampling." The modeled "area of uncertainty" overlapped the northeast corner of OU1 and encompassed a roughly triangular shaped area covering approximately 700,000 square feet, centered near the intersection of Old Country Road and the Carmen Avenue Extension. In the Phase VI RI, WSP proposed additional groundwater sampling near the center of this area of uncertainty to determine if additional model adjustment and calibration were necessary.

In 2011, the USACE installed a groundwater profile (MW-209) within the area of uncertainty as part of their investigation of offsite groundwater concerns attributable to the former Sylvania site. Based on the profiling results, the USACE designed and installed two permanent monitoring wells at the location of the MW-209 profile (Figure 1). The shallower well (MW-209-380) was installed with a screened interval from 370 to 380 feet bgs, and the deeper well (MW-209-530) was installed with a screened interval from 520 to 530 feet bgs. Four rounds of groundwater samples have been collected from each of the wells (June 2012, November 2012, April 2013 and August 2013), and 1,2-DCB has not been detected in any of the samples. The USACE's data for the MW-209 well pair confirm that the modeled limits of 1,2-DCB presented in the Phase VI RI were inaccurate and overestimated along the southwestern edge, and the JGE model calibration needs to be adjusted to account for these new data.

With the inclusion of the USACE's data, the limits of 1,2-DCB have been completely delineated with no overlap into the NCIA or OU1 above the New York standard of 3 µg/l. In the administrative record, EPA has also noted this fact: EPA's response to Comment #6 in the Responsiveness Summary (Appendix V to the ROD) stated, "The commenter indicates that 1,2-dichlorobenzene (1,2-DCB) is a contaminant marker of the Sylvania and General Instruments commingled plume. The EPA has evaluated the

<sup>&</sup>lt;sup>1</sup> WSP is not aware of any samples collected from these wells in 2014.



presence of 1,2-DCB within OU1 and has determined that it has not been detected frequently within OU1. The groundwater data set, used in the HHRA [Human Health Risk Assessment], indicates that the frequency of 1,2-DCB in OU1 was detected in 2 out 38 sample locations. The maximum detected concentration of 1,2-DCB was 1.1 micrograms per Liter (µg/L), which is lower than the state standard of 3 µg/L for 1,2-DCB. Additionally, 1,2-DCB was not detected in the raw water (pre-treated) samples from Bowling Green water supply wells 1 and 2, which were sampled by the EPA in August 2010 to evaluate eligibility of the Site for inclusion on the National Priorities List (NPL)." WSP agrees with EPA's response, and to our knowledge<sup>2</sup> 1,2-DCB has not been detected above 3 µg/l in any groundwater sample collected from a monitoring well located within the limits of OU1; and therefore, WSP concludes that VOCs attributable to the former GIC site do not overlap the boundaries of OU1.

Deep VOCs Upgradient of the NCIA, Inside the NCIA, and Downgradient of the NCIA in OU1 That Are Clearly Not Attributable to the Former GIC Site

## Upgradient of the NCIA

During the Phase VI RI, two groundwater profiles (LP-01 and LP-02) were installed upgradient of the NCIA and side-gradient of the former GIC site. Groundwater samples were collected at approximately 10-foot intervals in each profile, beginning at the water table and extending to at least 380 feet below ground surface (bgs) (Figure 1 and Table 1).

In LP-01, located considerably side-gradient of the former GIC site (approximately 600 feet west and 370 feet south of the southwestern corner of the former GIC property), 1,2-DCB was not detected in any of the 29 samples. A series of deep samples, from 329 to 360 feet bgs, all contained TCE at concentrations ranging from 120 to 450  $\mu$ g/l with PCE detected at only trace concentrations (ranging from non-detect to an estimated concentration of 1.6  $\mu$ g/l).

In LP-02, located approximately 1,300 feet west and 1,100 feet south of the southwestern corner of the former GIC property, 1,2-DCB was not detected in any of the 34 samples collected. Two deep samples, from 372 to 380 feet bgs, contained significantly elevated concentrations of TCE at 640 and 730  $\mu$ g/l, with PCE not detected at or above the reporting limits.

In 2012, the USACE installed a groundwater profile, MW-202, approximately 300 feet to the southwest of LP-02. 1,2-DCB was not detected in the 20 samples collected from MW-202; however, similar to the LP-02 results, TCE was detected in the sample from 376 feet bgs at a concentration of 270  $\mu$ g/l, with no PCE detected in the sample. The USACE installed a monitoring well to 380 feet bgs (MW-202-380), and has sampled the well four times in 2012 and 2013. In each of the well samples, TCE has been detected at significantly elevated concentrations of up to 1,300  $\mu$ g/l, with no detections of 1,2-DCB and only periodic trace detections of PCE with a maximum of 5.9  $\mu$ g/l.

Considered together, these results indicate an area of deep VOCs upgradient of the NCIA, which based on depth, side-gradient location, and chemical signature, are clearly unrelated to the former GIC site. The source of the deep VOCs (predominantly TCE) would be located considerably west and north of the

<sup>&</sup>lt;sup>2</sup> Since 2002, WSP has been compiling a chemical database of groundwaters ampling results from samples collected in association with the former GIC site and numerous other sites in the surrounding area, including sites within the NCIA. The database includes results from over 1,000 sampling locations (including over 700 groundwater monitoring wells), approximately 205,000 individual water quality chemical results.



former GIC site based on the widely understood regional groundwater flow patterns.<sup>3</sup> Notably, very little groundwater profiling data are available to the north of the NCIA, and to WSP's knowledge, no groundwater profiles have been installed due north of LP-02.

## Inside the NCIA and Downgradient of the NCIA in OU1

During the Phase VI RI, carbon tetrachloride was detected at significantly elevated concentrations in several deep samples from groundwater profiles WP-07 (located inside the NCIA) and WP-06 located downgradient of the NCIA in OU1. In WP-07, carbon tetrachloride was detected at 160  $\mu$ g/l in two samples collected at 290 and 301 feet bgs, which also contained TCE at concentrations of 1,300 and 1,400  $\mu$ g/l, respectively. Monitoring well W-37-325 was installed adjacent to WP-07, and semiannual monitoring data for the well collected from 2009 to 2014 show consistently elevated carbon tetrachloride and TCE at concentrations of similar magnitudes to the profiling data (Table 1). Downgradient of the NCIA in OU1, carbon tetrachloride was detected at elevated concentrations up to 390  $\mu$ g/l in seven samples from WP-06 collected from 313 to 393 feet bgs, with TCE also detected at elevated concentrations in each sample up to 2,400  $\mu$ g/l.

Since investigations began at the former GIC site in the 1980s, carbon tetrachloride has never been considered a chemical of concern associated with the site. In the primary onsite source area well, W-01-75, carbon tetrachloride has never been detected in 38 samples dating back to 1984. The deep and significantly elevated detections of carbon tetrachloride commingled with elevated TCE within the limits of the NCIA and OU1 are clearly unrelated to the former GIC site.<sup>4</sup>

<sup>&</sup>lt;sup>3</sup> This conclusion is consistent with the independent interpretation of the USACE presented during the December 16, 2014 meeting that a separate source of deep TCE is located west and north of both the former GIC site and the former Sylvania site.

<sup>4</sup> On September 23, 2013, Gradient submitted *Comments on the Proposed Plan for Operable Unit 1 of the New Cassel/Hicksville Groundwater Contamination Superfund Site* on behalf of IMC Eastern Corporation, a NCIA party located in the Western Plume area of the NCIA. Included in their comments were a series of figures (Figures 2.18a-c, 2.19a-c, and 2.20a-c; which depicted regional groundwater isoconcentration contours for PCE, TCE, and 1,1,1-trichloroethane (TCA) during different time periods (1994 to 1998, 1999 to 2007, and 2008 to 2011). As discussed during the December 16, 2014 meeting, these figures are misleading at best, and do not accurately reflect groundwater quality conditions in the area. As Gradient noted on each figure, "Isoconcentration contours [were] drawn using maximum PCE [TCE or TCA] values at all depth intervals during [specified time period]". Several factors, which would have a dramatic effect on the interpolation of the isoconcentration lines, have been completely ignored by Gradient. The contours span an area including numerous distinct sites with known source areas and groundwater quality data collected over depths that vary by more than 500 feet. Gradient made no attempt to separate the contours based on their respective sources, known groundwater flow patterns (both horizontal and vertical), or geospatial variation in sample depths. Instead, Gradient created the contours in two dimensions following a "connect-the-dots" approach, irrespective of whether the resulting image accurately depicted known conditions or not.



If you have any questions on the content of this letter, please contact me at 781-933-7340 x301 or james.sobieraj@wspgroup.com.

Sincerely yours,

James A. Sobieraj, P.E.

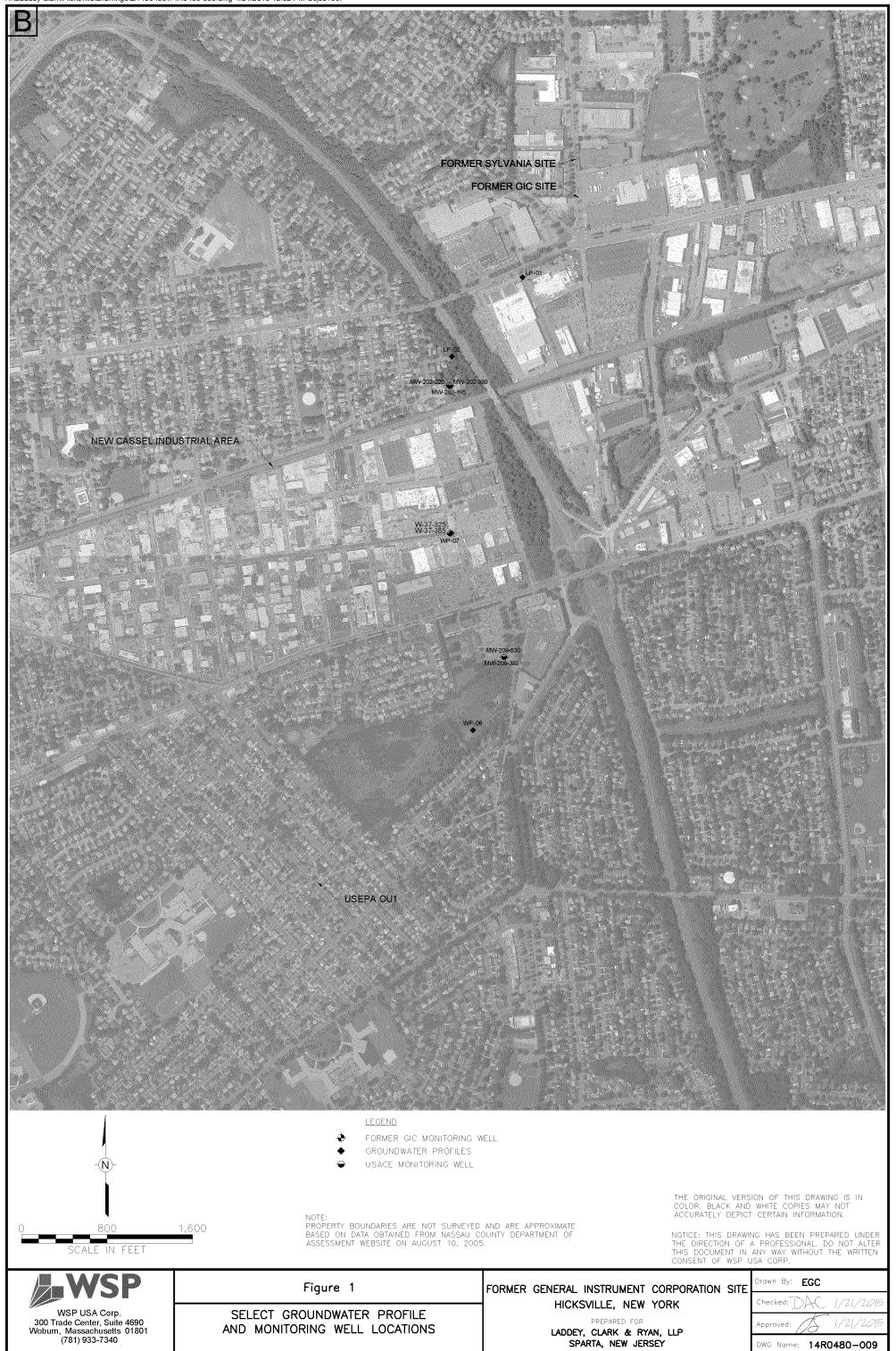
Senior Project Director / General Manager

JS:dac

Enclosures

cc/encl: Todd M. Hooker, Esq., Laddey, Clark & Ryan LLP

Figures



Tables

Table 1
Supplemental Groundwater Sampling Results
New Cassel / Hicksville Groundwater Contamination Superfund Site
Nassau County, New York

		Analyte	СТ	1,2-DCB	PCE	TCE
		Regulatory Limit	5	3	5	5
Groundwater Profile / Well ID	Date	Depth (ft)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
LP-01	40/0/0007	70	1U	1U	0.66 J	0.8J
	10/9/2007	80	1U	1U	0.51 J	0.31 J
		88	1U	1U	1.3	0.47 J
		100	1U	1U	0.63 J	0.23 J
	10/10/2007	109	1U	1U	4	3.9
		121	1U	1U	5.3	4.7
		130	1U	1U	28	43
		152	2U	2U	140	34
	10/16/2007	161	1U	1U	11	0.89 J
		170	1U	1U	42	0.68 J
		182	1U	1U	0.42 J	1U
		192	2U	2U	160	9.7
		200	4U	4U	300	20
	10/17/2007	211	1U	1U	29	12
		219	2U	2U	97	46
		229	4U	4U	200	80
	10/18/2007	255	1U	1U	3.7	0.34 J
		262	1U	1U	0.78 J	1U
		270	1U	1U	0.51 J	0.55 J
	10/19/2007	280	1U	1U	5	0.74 J
		290	1U	1U	6.5	0.84 J
		303	2U	2U	15	3.3
		310	0.7J	1U	8.7	30
	10/20/2007	329	5U	5U	1.6J	350
	10/20/2007	338	10U	10U	10U	450
		353	5U	5U	5U	280
	10/21/2007	360	2U	2U	0.78 J	120
		372	2U	2U	0.77 J	88
	10/22/2007	380	1U	1U	0.92 J	7.6

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		Regulatory Limit	5	3	5	5
Groundwater Profile / Well ID	Date	Depth (ft)	(µg/l)	(µg/I)	(µg/l)	(µg/l)
LP-02		67	1U	1U	1U	1U
	2/4/2008	76	1U	1U	0.17	1U
		91	1U	1U	3.4	0.37
		100	1U	1U	2.6	0.28
	2/5/2008	109	0.22	1U	4.3	0.21
		120	0.57	1U	9.6	0.41
		130	1U	1U	1.9	1U
	2/6/2008	140	1U	1U	0.22	1U
		150	1U	1U	0.37	1U
		160	1U	1U	0.99	0.24
	2/7/2008	170	1U	1U	1.1	1U
		180	1U	1U	2.5	1U
	2/7/2008	191	1U	1U	2.2	1U
	2/12/2008	200	1U	1U	2.5	1U
	2/13/2008	216	1U	1U	3.3	1U
		225	1U	1U	1.1	1U
	2/14/2008	235	1U	1U	2	1U
		245	1U	1U	1.3	0.14
		255	1U	1U	1.1	0.18
		265	1U	1U	1.3	0.24
		275	1U	1U	1.2	0.16
		285	1U	1U	1.1	0.25
	2/15/2008	292	1U	1U	0.87	0.67
	2/15/2008	303	1U	1U	0.35	0.13
	2/16/2008	310	1U	1U	0.4	0.39
		320	1U	1U	0.87	1.3
		330	1U	1U	0.1	0.95
	2/17/2008	339	1U	1U	0.21	0.52
	2/18/2008	353	1U	1U	1U	2.4
	2/10/2000	360	1U	1U	1U	4.5
	2/19/2008	372	20U	20U	20U	640
	2/19/2000	380	20U	20U	20U	730
	2/20/2008	392	1.7U	1.7U	1.7U	35
	2/26/2008	402	1U	1U	1U	7.7

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Groundwater Profile / Well ID	Date	Depth (ft)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
MW-202-P	5/9/2012	76	1U	1U	1U	1U
		96	1U	1U	1U	1U
	5/10/2012	116	1U	1U	1U	1L
		142	1U	1U	0.75	1L
	5/11/2012	156	1U	1U	1U	1L
	3/11/2012	176	1U	1U	1U	1U
		201	1U	1U	0.36	1
	5/14/2012	216	1U	1U	1U	1U
		236	1U	1U	0.25	1L
	5/15/2012	256	1U	1U	1U	1L
		276	1U	1U	1U	1L
		301	1U	1U	1U	1U
	5/16/2012	316	1U	1U	0.35	51
		336	1U	1U	1U	1L
	5/17/2012	356	1U	1U	0.45	24
		376	1U	1U	10	270
		396	1U	1U	1U	2
	5/21/2012	456	1U	1U	1U	0.93
	5/22/2012	476	1U	1U	1U	0.79
		496	1U	1U	1U	1L
MW-202-380	6/25/2012	370-380	10U	10U	10 U	1,100
	11/14/2012	370-380	10U	10U	5.9	1,300
	4/25/2013	370-380	0.8J	0.15 U	1	770
	8/22/2013	370-380	0.68 J	5U	1.2	680
MW-209-380	6/7/2012	370-380	8.7	1U	94	660
	11/3/2012	370-380	12	5U	170	800
	4/23/2013	370-380	11	0.3U	200	610
	8/26/2013	370-380	16	2.5U	180	580

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Groundwater Profile / Well ID	Date	Depth (ft)	(μg/l)	(µg/l)	(μg/l)	(µg/l)
WP-06		40	1U	1U	1U	1L
	0/40/0007	60	1U	1U	1U	1L
	9/19/2007	80	1U	1U	1U	11
		100	1U	1U	1U	11
	9/19/2007	120	1U	1U	1U	11
		140	1U	1U	1U	1l
	0/00/0007	150	1U	1U	1U	11
	9/20/2007	160	1U	1U	1U	1l
		171	1U	1U	1U	11
	9/21/2007	181	1U	1U	1U	11
		190	1U	1U	1U	11
		200	1U	1U	0.45	11
		210	1U	1U	15	0.72
		222	1U	1U	38	2.3
		230	40U	40U	2,400	140
	0/00/0007	242	40U	40U	2,300	130
		251	10U	10U	530	26
	9/22/2007	260	20U	20U	930	52
		270	0.53	2U	130	8.7
		280	0.74	1U	2.3	1.3
	9/23/2007	290	5.2	1U	17	60
		300	14	1U	26	32
		313	230	10U	100	480
	9/24/2007	321	180	40U	120	2,000
		330	390	20U	110	1,700
		341	320	10U	73	690
		350	88	2U	20	110
	9/25/2007	387	110	40U	780	2,400
	9/26/2007	393	110	20U	810	1,000
	9/27/2007	452	0.43	1U	3.2	3.3
	10/2/2007	473	1U	1U	59	39

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		Regulatory Limit	5	3	5	5
Groundwater Profile / Well ID	Date	Depth (ft)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
WP-07	2/28/2008	63	1U	1U	72	4.2U
		70	1U	1U	59	2
	2/29/2008	80	500 U	500 U	31,000	730
		92	5U	5U	300	3.6J
	3/1/2008	100	1U	1U	9.1	0.24
	3/1/2000	109	1U	1U	8.3	0.3J
	3/2/2008	128	1U	1U	0.78 J	15
	3/2/2000	140	1U	1U	0.26 J	0.25
		173	0.42 J	1U	2.9	16
	3/3/2008	180	1U	1U	0.59 J	0.34
		187	1U	1U	0.87 J	1.6
	3/4/2008	198	0.33 J	1U	8.2	26
		208	0.35 J	1U	12	21
	3/5/2008	224	1U	1U	9.9	29
	3/6/2008	238	1.6	1U	13	73
		250	0.77 J	1U	9.3	26
	3/11/2008	260	8.4	4U	31	200
		272	9.4 J	10U	38	190
	3/12/2008	284	18	10 UJ	55	360
		290	160	20 UJ	130	1,300
		301	160	25 UJ	120	1,400
	3/13/2008	313	61	25 UJ	260	1,200
		320	13	10 UJ	120	500
	3/14/2008	329	56U	56U	610	1,800
	3/15/2008	353	11U	11U	120	360
		360	18U	18U	190	520
		373	5U	5U	83	150
	3/16/2008	380	11U	11U	62	54
		393	1U	1U	19	3.9
	3/17/2008	402	0.24 J	1U	68	11
	3/11/2000	410	0.48 J	1U	20	48
	2/4 0/2002	418	5U	5U	5U	180
	3/18/2008	427	2U	2U	2U	78

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		Analyte	CT	1,2-DCB	PCE	TCE
		Regulatory Limit	5	3	5	5
Groundwater Profile / Well ID	Date	Depth (ft)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
W-37-325	3/24/2009	285-325	96	10U	180	1,500
	5/7/2009	285-325	95	10U	130	1,200
	12/1/2009	285-325	140	10U	160	1,500
	4/29/2010	285-325	130	0.50 U	150	1,500
	5/27/2010	285-325	95	0,82 J	150	1,400
	12/2/2010	285-325	150	0.80	210	1,500
	6/2/2011	285-325	120	0.54 J	160	1,300
	11/17/2011	285-325	100	1.0U	170	1,200
	5/17/2012	285-325	30	0.45 J	110	530
	6/14/2012	285-325	56	0.1	150	780
	11/30/2012	285-325	10	0.50 U	95	210
	5/9/2013	285-325	24	1.0U	130	440
	11/20/2013	285-325	25	0.85 J	180	400
	5/14/2014	285-325	28J	0.50 J	200 J	440 J
	11/13/2014	285-325	19	0.36 J	150	310

a/  $\mu$ g/I = micrograms per liter; ft = feet; CT = carbon tetrachloride; DCB = dichlorobenzene; PCE = tetrachloroethene, TCE = trichloroethene; J = estimated result; U = not detected at or above adjusted laboratory reporting limit; NA = not available. All results in micrograms per liter ( $\mu$ g/I).

b/ Data shown in bold exceed the New York State or Federal cleanup criteria. Data shown in grey indicate areas with deep elevated TCE. Areas shown in blue indicate comingled TCE and CT.